

## Lesson 2 - 3DS MAX Basics

### Construction Planes

Three construction planes parallel to orthographic views passing through 0,0,0  
Geometry “footprints” are **always** drawn in viewport’s construction plane.

Perspective, “Orthographic” & Camera views are the same as the Top view

Autogrid – Sets drawing plane to any geometry face (triangle defines a plane)

### Primitives – Building Blocks

Box - Creation Parameters (Length, Width, Height, Segments)

Sub-Objects (Vertex, Edge, Face)

Pivot Point

Cylinder, Sphere, etc...

Extended Primitives

### Alignments

Align (ALT-A) – Places and orients an object(s) with another object

1. Select the object(s) to be moved (“Current Object”)
2. Activate the “Align” command (in the toolbar)
3. Choose the (stationary) object to align to (“Target Object”)
4. Choose the axis (or axes) to align and the alignment “edge” for both  
(i.e. Maximum X Position is the most positive X point)  
Check current orientation, typically view related
5. “Apply” keeps dialog box open for more alignments. “OK” closes

Works with sub-objects on a limited basis

“Local” – Reorients “Current” object to “Target’s” local axis in X, Y &/or Z

Normal Align – For aligning an object using faces (normal vectors)

### Organization – Important for all, but especially for large models

Naming – Name when created or accessed using the “Modify” tab

Grouping – “Group” pull-down menu. Groups can be nested.

Group – Creates a group

Open, Close – Allows manipulating of individual objects in a group

Ungroup – Removes group

Explode – Removes any and all nested groups. Returns to original objects

### Display – Hide/Unhide, Freeze/Unfreeze

Scene Explorer – Click lightbulb and/or snowflake icon

Display tab (command panel) – Best for category hide/unhide

## Lesson 2 - 3DS MAX Basics (cont...)

Transforms – Move (Rotate & Scale). Can use to select-only Reference Coordinate System (View, Local, World, etc...). Also “Align”

Common mechanism:

1. Gizmo – Color-coded axes (Red=X, Green=Y, Blue=Z). Yellow=active
2. Type-in – Right-click on transform button or fields at the bottom of interface  
“Absolute” – Coordinates of the pivot point  
“Offset” – Change from current state (i.e. how far to move)
3. Cloning – Hold “Shift” prior to executing the transform.  
“Copy” – Independent clone of the original  
“Instance” – Linked clone of the original  
 (“Reference” – Relates to modifiers)  
  
“Number of Copies” (Visual Array) - in addition to original  
Numeric cloning only available through the “Array” command
4. Snaps (magnets)  
Left-click activates. Also may be keyboard shortcuts  
Right-click gives options/settings
5. Pivot Point – Especially important for Rotate and Scale

Rotate – Point of rotation – **Pivot point**, Selection center or transform center.  
Can make Polar Array

Scale – Point of scaling – **Pivot point**, Selection center or transform center.  
Uniform/Non-Uniform/Squash

Array – Used to numerical clone objects (Transforms). “Tools” pull-down menu.

Count – Total number of objects (original + clones)

Dimensions – 1, 2 or 3. Best when the axes are different

Incremental - Value (distance, angle or percentage) between objects

Total – Total value (increment x count)

Preview – Review of settings